WE CLAIM:

1. A solar electrolysis power co-generation system, comprising:

a solar electrolysis power source including a solar panel, an electrolysis unit, a hermetically sealed compressor, a hydrogen tank, and a hydrogen-powered fuel cell; and

a control unit including an inverter, a microprocessor, and a modem, wherein said microprocessor is connected with said modem, said inverter, and said hydrogen-powered fuel cell, wherein said inverter is connected with said hydrogen-powered fuel cell, and wherein said microprocessor controls said inverter and said hydrogen-powered fuel cell.

2. The solar electrolysis power co-generation system of claim 1, wherein said inverter is connected with a power grid that is monitored and controlled by a local power utility, wherein said inverter is connected with an individual consumer, and wherein said microprocessor is linked to said local power utility through said modem.

3. The solar electrolysis power co-generation system of claim 1, wherein said solar electrolysis power source produces, compresses, and stores hydrogen gas, and wherein said hydrogen gas is provided to fuel said hydrogen-powered fuel cell.

4. The solar electrolysis power co-generation system of claim 1, wherein said inverter is a 140V 60 Hz inverter.

5. A solar electrolysis power co-generation system, comprising:

a solar electrolysis power source including a solar panel, an electrolysis unit, a hermetically sealed compressor, a hydrogen tank, and a hydrogen-powered fuel cell; and

a control unit including an inverter, a microprocessor, and a modem, wherein said microprocessor is connected with said modem, said inverter, and said hydrogen-powered fuel cell, wherein said inverter is connected with said hydrogen-powered fuel cell, and wherein said microprocessor controls said inverter and said hydrogen-powered fuel cell;

wherein said inverter is connected with a power grid that is monitored and controlled by a local power utility, wherein said inverter is connected with an individual consumer, and wherein said microprocessor is linked to said local power utility through said modem.

6. The solar electrolysis power co-generation system of claim 5, wherein said solar electrolysis power source further includes:

a source of water and a system controller;

wherein said electrolysis unit is connected with said source of water and receives water from said source of water, and wherein said electrolysis unit provides the electrolysis of said water and produces hydrogen gas and oxygen gas;

wherein said solar panel is connected with said electrolysis unit, and wherein said solar panel receives solar rays and provides electrical energy to said electrolysis unit;

wherein said hermetically sealed compressor is connected with said electrolysis unit, and wherein said hermetically sealed compressor receives said hydrogen gas from said electrolysis unit;

wherein said hydrogen tank is connected with said hermetically sealed compressor, and wherein said hydrogen tank receives said hydrogen gas from said hermetically sealed compressor;

wherein said system controller is connected with said solar panel, said electrolysis unit, said hermetically sealed compressor, and said hydrogen tank; and

wherein said fuel cell is connected with said hydrogen tank, and wherein said fuel cell receives said hydrogen gas from said hydrogen tank.

7. The solar electrolysis power co-generation system of claim 6, wherein said electrolysis unit comprises:

an electrolysis chamber including an oxygen chamber and an hydrogen chamber, wherein said electrolysis chamber is connected with said source of water, and wherein said electrolysis chamber receives water from said source of water;

a cathode located within said hydrogen chamber, wherein said cathode is connected with said solar panel creating a negative charge at said cathode;

an anode located within said oxygen chamber, wherein said anode is connected with said solar panel creating a positive charge at said anode;

a pH sensor located within said electrolysis chamber;

a water level sensor located within said electrolysis chamber;

a water fill inlet including a water fill valve, wherein said water fill inlet connects said electrolysis chamber with said source of water;

an electrolyte tank containing an electrolyte and including an electrolyte fill inlet and an electrolyte fill valve, wherein said electrolyte fill inlet connects said electrolyte tank with said electrolysis chamber;

an oxygen vent including an oxygen vent valve, wherein said oxygen vent connects said oxygen chamber of said electrolysis chamber with the outside atmosphere; and

a hydrogen vent, wherein said hydrogen vent connects said hydrogen chamber of said electrolysis chamber with said hermetically sealed

compressor.

8. The solar electrolysis power co-generation system of claim 6, wherein said hydrogen tank comprises:

a hydrogen tank fill valve, wherein said hydrogen tank fill valve is located between said hermetically sealed compressor and said hydrogen tank;

a hydrogen tank output valve, wherein said hydrogen tank output valve is located between said hydrogen tank and said fuel cell; and

a pressure gauge, wherein said pressure gauge indicates the pressure of said hydrogen gas stored inside said hydrogen tank.

9. The solar electrolysis power co-generation system of claim 6, wherein said solar electrolysis power source further comprises a data and control bus, wherein said data and control bus connects said system controller with said pH sensor, said water level sensor, said water fill valve, said electrolyte fill valve, said oxygen vent valve, said hydrogen tank fill valve, said hydrogen tank output valve, said pressure gauge of said hydrogen tank, and said hermetically sealed compressor.

10. The solar electrolysis power co-generation system of claim 6, wherein said electrolyte is added to said water contained within said electrolysis chamber creating a pH value between 6 and 7.

11. The solar electrolysis power co-generation system of claim 6, wherein said electrolyte is sulfuric acid.

12. The solar electrolysis power co-generation system of claim 6, wherein said water source is a water tank holding water.

13. A solar electrolysis power co-generation system, comprising:

a solar electrolysis power source including;

a water tank holding water;

an electrolysis unit, wherein said electrolysis unit is connected with said water tank and receives said water from said water tank, wherein said electrolysis unit provides the electrolysis of said water and produces hydrogen gas and oxygen gas, and wherein said electrolysis unit comprises:

an electrolysis chamber including an oxygen chamber and a hydrogen chamber, wherein said electrolysis chamber is connected with said water tank and wherein said electrolysis chamber receives water from said water tank;

a cathode located within said hydrogen chamber, wherein said cathode is connected with said solar panel creating a negative charge at said cathode;

an anode located within said oxygen chamber, wherein said anode is connected with said solar panel creating a positive charge at said anode;

a pH sensor located within said electrolysis chamber;

a water level sensor located within said electrolysis chamber;

a water fill inlet including a water fill valve, wherein said water fill inlet connects said electrolysis chamber with said source water tank;

an electrolyte tank containing an electrolyte and including an electrolyte fill inlet and an electrolyte fill valve, wherein said electrolyte fill inlet connects said electrolyte tank with said electrolysis chamber;

an oxygen vent including an oxygen vent valve, wherein said oxygen vent connects said oxygen chamber of said electrolysis chamber with the outside atmosphere; and

a hydrogen vent, wherein said hydrogen vent connects said

hydrogen chamber of said electrolysis chamber with said hermetically sealed compressor;

a solar panel, wherein said solar panel is connected with said electrolysis unit, and wherein said solar panel receives solar rays and provides electrical energy to said electrolysis unit;

a hermetically sealed compressor, wherein said hermetically sealed compressor is connected with said electrolysis unit and wherein said hermetically sealed compressor receives said hydrogen gas from said electrolysis unit;

a hydrogen tank, wherein said hydrogen tank is connected with said hermetically sealed compressor, wherein said hydrogen tank receives said hydrogen gas from said hermetically sealed compressor, and wherein said hydrogen tank comprises:

a hydrogen tank fill valve, wherein said hydrogen tank fill valve is located between said hermetically sealed compressor and said hydrogen tank;

a hydrogen tank output valve, wherein said hydrogen tank output valve is located between said hydrogen tank and said fuel cell; and

a pressure gauge, wherein said pressure gauge indicates the pressure of said hydrogen gas stored inside said hydrogen tank;

a hydrogen-powered fuel cell, wherein said fuel cell is connected with said hydrogen tank, and wherein said fuel cell receives said hydrogen gas from said hydrogen tank;

a system controller, wherein said system controller is connected with said solar panel, said AC power source, said electrolysis unit, said hermetically sealed compressor, and said hydrogen tank; and

a data and control bus, wherein said data and control bus connects said system controller with said pH sensor, said water level sensor, said water fill valve, said electrolyte fill valve, said oxygen vent valve, said hydrogen tank fill valve, said hydrogen tank output valve, said pressure gauge

of said hydrogen tank, and said hermetically sealed compressor; and

a control unit including an inverter, a microprocessor, and a modem, wherein said microprocessor is connected with said modem, said inverter, and said hydrogen-powered fuel cell, wherein said inverter is connected with said hydrogen-powered fuel cell, and wherein said microprocessor controls said inverter and said hydrogen-powered fuel cell;

wherein said inverter is connected with a power grid that is monitored and controlled by a local power utility, wherein said inverter is connected with an individual consumer, and wherein said microprocessor is linked to said local power utility through said modem.

14. The solar electrolysis power co-generation system of claim 13, wherein said hydrogen-powered fuel cell provides power to a local power grid.

15. The solar electrolysis power co-generation system of claim 13, wherein said hydrogen-powered fuel cell provides power to an individual consumer having an electrical load.

16. The solar electrolysis power co-generation system of claim 15, wherein said individual consumer is a house.

17. The solar electrolysis power co-generation system of claim 13, wherein said oxygen gas is vented through said oxygen vent valve to the atmosphere.

18. The solar electrolysis power co-generation system of claim 13, wherein said oxygen is collected in said oxygen chamber of said electrolysis chamber.

19. The solar electrolysis power co-generation system of claim 13,

wherein said hydrogen is collected in said hydrogen chamber of said electrolysis chamber.

20. The solar electrolysis power co-generation system of claim 13, wherein the pH value of said water contained in said electrolysis chamber is maintained between 6 and 7 by adding said electrolyte from said electrolyte tank.

21. A solar electrolysis power co-generation system, comprising:

a solar electrolysis power source including a solar panel, an electrolysis unit, a hermetically sealed compressor, a hydrogen tank, and a hydrogen-powered fuel cell, wherein said solar electrolysis power source produces, compresses, and stores hydrogen gas, and wherein said hydrogen gas is provided to fuel said hydrogen-powered fuel cell; and

a control unit including an inverter, a microprocessor, and a modem, wherein said microprocessor is connected with said modem, said inverter, and said hydrogen-powered fuel cell, wherein said inverter is connected with said hydrogen-powered fuel cell, and wherein said microprocessor controls said inverter and said hydrogen-powered fuel cell;

wherein said inverter is connected with a local power grid and with a house having an electrical load;

wherein said local power grid is monitored and controlled by a local power utility; and

wherein said microprocessor is linked to said local power utility through said modem.

22. The solar electrolysis power co-generation system of claim 21, wherein said microprocessor receives a first signal from said local power utility through said modem and starts the operation of said hydrogen-powered fuel cell, and wherein said hydrogen-powered fuel cell provides electrical power to

said local power grid via said inverter.

23. The solar electrolysis power co-generation system of claim 21, wherein said microprocessor receives a second signal from said local power utility through said modem and shuts down the operation of said hydrogen-powered fuel cell.

24. The solar electrolysis power co-generation system of claim 21, wherein said microprocessor receives a third signal from said local power utility through said modem and shifts said electrical load of said house from said local power grid to said hydrogen-powered fuel cell.

25. The solar electrolysis power co-generation system of claim 21, wherein said control unit disconnects said inverter from said local power grid, wherein said control unit starts the operation of said hydrogen-powered fuel cell, and wherein said hydrogen-powered fuel cell provides power to said house.

26. The solar electrolysis power co-generation system of claim 21, wherein said microprocessor receives a fourth signal from said local power utility through said modem and shifts said electrical load of said house from said hydrogen-powered fuel cell to said local power grid.

27. A method for decentralized power co-generation, comprising the steps of:

providing a solar electrolysis power co-generation system that includes a solar electrolysis power source and a control unit;

connecting said solar electrolysis power co-generation system with an individual consumer having an electrical load;

connecting said solar electrolysis power co-generation system with a local power grid;

sending a first signal from said local power utility to said control unit indicating demand for electrical power;

activating said solar electrolysis power source and providing electrical power to said local power grid;

sending a second signal from said local power utility to said control unit indicating no demand for electrical power; and

shutting down the operation of said solar electrolysis power source.

28. The method for decentralized power co-generation of claim 27, further including the steps of:

shifting said electrical load of said individual consumer from said local power grid to said solar electrolysis power source;

providing power to said local power grid and said individual consumer with said solar electrolysis power source; and

shifting said electrical load of said individual consumer from said solar electrolysis power source to said local power grid.

29. The method for decentralized power co-generation of claim 27, further including the steps of:

providing a solar panel, an electrolysis unit, a hermetically sealed compressor, a hydrogen tank, and a hydrogen-powered fuel cell; and

providing an inverter, a microprocessor, and a modem.

30. The method for decentralized power co-generation of claim 29, further including the steps of:

monitoring and controlling said local power grid by a local power utility;

linking said microprocessor to said local power utility through said modem; and

controlling said fuel cell and said inverter with said microprocessor.

31. A method for decentralized power co-generation, comprising the steps of:

providing a solar electrolysis power co-generation system that includes a solar electrolysis power source and a control unit;

connecting said solar electrolysis power co-generation system with an individual consumer having an electrical load;

connecting said solar electrolysis power co-generation system with a local power grid;

detecting interruption of power transmission through said local power grid with said control unit;

disconnecting said solar electrolysis power source from said local power grid with said control unit;

activating said solar electrolysis power source;

producing electrical power with said solar electrolysis power

source; and

providing said electrical power produced with said solar electrolysis power source to said individual consumer.

32. The method for decentralized power co-generation of claim 31, further including the steps of:

detecting power transmission through said local power grid with said control unit;

shutting down the operation of said solar electrolysis power source; and

connecting said solar electrolysis power source with said local power grid using said control unit.

33. The method for decentralized power co-generation of claim 31, further including the steps of:

providing a plurality of solar electrolysis power co-generation systems; and

connecting said plurality of solar electrolysis power co-generation systems with said local power grid.